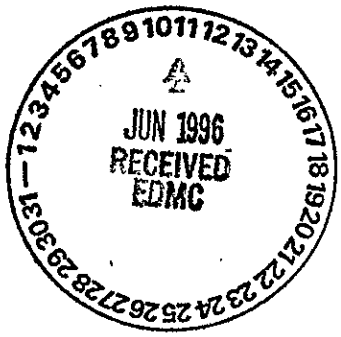
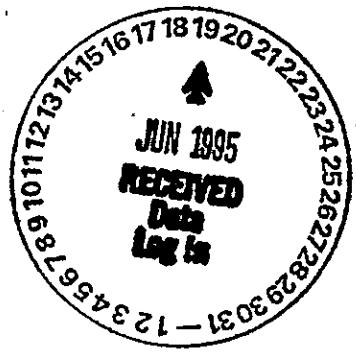
Lockheed Environmental Systems & Technologies Co.
Lockheed Analytical Services
975 Kelly Johnson Drive Las Vegas, Nevada 89119-3705
Telephone 702-361-0220 800-582-7605 Facsimile 702-361-8146

0044353 LK4653

LOCKHEED MARTIN



June 15, 1995



Ms. Joan Kessner
Bechtel Hanford, Inc.
345 Hills
P.O. Box 969
Richland, WA 99352

RE:	Log-in No.:	L4653
	Quotation No.:	Q400000-B
	SAF:	B95-053
	Document File No.:	0601596A
	BHI Document File No.:	230
	SDG No.:	LK4653

The attached data report contains the analytical results of samples that were submitted to Lockheed Analytical Services on 1 June 1995.

The temperature of the cooler upon receipt was 2°C. Sample containers received agree with the chain-of-custody documentation. Sample containers were received intact. With the exception of the hexavalent chromium analysis, samples were received in time to meet the analytical holding time requirements.

The case narratives included in the following attachments provide a detailed description of all events that occurred during sample preparation, analysis, and data review specific to the samples and analytical methods requested.

A list of data qualifiers, chain-of-custody forms, sample receiving checklist, and log-in report are also enclosed representing the samples received within this group.

If you have any questions concerning the analysis or the data please call Kathleen Hall at (509) 943-4423.

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Lockheed Analytical Services

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Release of this data report has been authorized by the Laboratory Director or the Director's designee as evidenced by the following signature.

" I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manger or a designee, as verified by the following signature."

Sincerely,

Karen Hermann for KMH

Kathleen M. Hall
Client Services Representative

cc: Client Services
Document Control

CASE NARRATIVE
INORGANIC CHROMIUM VI ANALYSES

The routine calibration and quality control analyses performed for this batch include as applicable: instrument tune (ICP/MS only), initial and continuing calibration verification, initial and continuing calibration blanks, method blank(s), laboratory control sample(s), ICP interference check samples (ICP only), serial dilutions, analytical (post-digestion) spike samples, matrix spike (predigestion) sample(s), duplicate sample(s).

Preparation and Analysis Requirements

- One water sample was received for LK4653 and prepared as batch 601 bh1 and analyzed for selected analytes as requested on the chain of custody. Quality control analysis was performed on the following sample:

Client ID	LAL #		Method
BOFM88	L4653-2	MS, DUP	7196 Hexavalent Chromium

Holding Time Requirements

- The sample for Method 7196 Hexavalent Chromium analysis was received outside of holding time.

Method Blanks

- The concentration levels of all the requested analytes in the method blank were below the reporting detection limits.

Internal Quality Control

- All Internal Quality Control were within acceptance limits.

Kay McCann
Prepared By

June 8, 1995
Date

CASE NARRATIVE
INORGANIC CHROMIUM ANALYSES

The routine calibration and quality control analyses performed for this batch include as applicable: instrument tune (ICP/MS only), initial and continuing calibration verification, initial and continuing calibration blanks, method blank(s), laboratory control sample(s), ICP interference check samples (ICP only), serial dilutions, analytical (post-digestion) spike samples, matrix spike (predigestion) sample(s), duplicate sample(s).

Preparation and Analysis Requirements

All samples were received on June 1, 1995. The samples were logged in as L4653 and were prepared and analyzed in batch 601 bh1.

Holding Time Requirements

- All samples were analyzed within the method-specific holding times.

Method Blanks

- The concentration levels of all the requested analytes in the method blank were below the reporting detection limits.

Internal Quality Control

- All Internal Quality Control were within acceptance limits.

Shellee McGrath
Prepared By

June 14, 1995
Date

Lockheed Analytical Services

DATA QUALIFIERS FOR INORGANIC ANALYSES

[Revised 08/28/92]

For Use on the Analytical Data Reporting Forms	
B	***For CLP Analyses Only*** -- Reported value is less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).
C	***For Routine, Non-CLP Analyses Only*** -- Any constituent that was also detected in the associated blank whose concentration was greater than the reporting detection limit (RDL).
D	Presence of high levels of interfering constituents required dilution of sample which increased the RDL by the dilution factor.
E	Estimated value due to presence of interference.
H	Sample analysis performed outside of method-or client-specified maximum holding time requirement.
M	***For CLP Analyses Only*** -- Duplicate injection precision criterion was not met.
N	Matrix spike recovery exceeded acceptance limits.
S	Reported value was determined from the method of standard addition.
U	***For CLP Reporting Only*** -- Constituent was analyzed for but not detected (sample quantitation must be corrected for dilution and percent moisture).
W	***For AAS Only*** -- Post-digestion spike for Furnace AAS did not meet acceptance criteria and sample absorbance is less than 50% of spike absorbance.
X, Y, or Z	Analyst-defined qualifier.
*	Relative percent difference (RPD) for duplicate analysis exceeded acceptance limits.
+	Correlation coefficient (r) for the MSA is less than 0.995.
For Use on the QC Data Reporting Forms	
a[1]	The spike recovery and/or RPD for matrix spike and matrix spike duplicates cannot be evaluated due to insufficient spiking level compared to the elevated sample analyte concentration.
b[1]	The RPD cannot be computed because the sample and/or duplicate concentration was below the RDL.

[1] Used as footnote designations on the QC summary form.

LOCKHEED ANALYTICAL SERVICES
LOGIN CHAIN OF CUSTODY REPORT (ln01)
Jun 01 1995, 02:50 pm

Login Number: L4653
Account: 596 Bechtel Hanford, Inc. * Richland, WA
Project: BECHTEL-HANFORD Bechtel Hanford Project

Laboratory Sample Number	Client Sample Number	Collect Date	Receive Date	PR	Due Date
L4653-1 temp 2; SAF# B95-053 Location: RFG01-43D Water 1 S SCREENING	B0FM88 Hold:26-NOV-95	30-MAY-95	01-JUN-95		06-JUL-95
L4653-2 temp 2; SAF# B95-053 Location: RFG01-07A Water 1 S 7196 CHROMIUM (VI)	B0FM88 Hold:31-MAY-95	30-MAY-95	01-JUN-95		06-JUL-95
L4653-3 temp 2; SAF# B95-053 Location: RFG01-07A Water 1 S 218.2 CHROMIUM	B0FM88 Hold:26-NOV-95	30-MAY-95	01-JUN-95		06-JUL-95
L4653-4 SAF# B95-053 Location: Water 1 S EDD - DISK DEL. Water 1 S INORG TYPE 2 RPT	REPORT TYPE	01-JUN-95	01-JUN-95		06-JUL-95

Signature: Mur Ab

Date: 6-1-95

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L4653

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1

Data Turnaround: [ ] Priorty [x] Normal

Collector: Doug Bowers	Company Contact: Dave Blumenkranz	Telephone No.: 372-9658
Project Designation: 100 HR-3 Treatability Study	Sampling Location: 100 D	SAF No.: B95-053
Ice Chest No.: ER-402	Field Logbook No.: N/A	Method of Shipment: Air Freight
Shipped To: Lockheed	Offsite Property No.: W95-0-0204-32	Bill of Lading/Air Bill No.: 39046029506

Possible Sample Hazards/Remarks: unknown

Special Handling and/or Storage: cool to 4 C

	Analysis 1	Analysis 2	Analysis 3	Analysis 4
Preservative	HNO3	none	none	none
Type of Container	G/P	G/P	P/G	P/G
No. of Container(s)	1	1	1	1
Volume	500 mL	500 mL	20 mL	20 mL
SAMPLE ANALYSIS	Chromium - Total	Chromium VI	Activity Scan	Rad Screen

Sample No.	Matrix*	Date Sampled	Time Sampled	Chromium - Total	Chromium VI	Activity Scan	Rad Screen
BCF 188	W	5-30-95	1039	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	5-30-95/1210	[signature] B. Whitten ERC	5-30-95 1210
[signature] B. Whitten ERC	5-31-95 0900		

SPECIAL INSTRUCTIONS

Analysis vor Chromium (VI) by SW -846 7196 is being requested for Information only. The ERC Contractor acknowledges the 24-hour holding time will not be met.

Matrix*

S = Soil
SE = Sediment
SO = Solid
SL = Sludge
W = Water
O = Oil
A = Air
DS = Drum Solids
DL = Drum Liquids
T = Tissue
WI = Wipe
L = Liquid
V = Vegetation
X = Other

LABORATORY SECTION	Received By: [signature]	Title: Sample Custodian	Date/Time: 6-1-95 0900
FINAL SAMPLE DISPOSITION	Disposal Method:	Disposed By:	Date/Time:

DISTRIBUTION: Original- Sample Yellow - Sampler

BC-6000-B28 (12/92)

9601596A

010

Environmental Restoration Contractor **ERC Team**

Interoffice Memorandum

Job No. 22192
Written Response Required: NO
CCN: N/A
OU: 100HR-3
TSD: N/A
ERA: N/A
Subject Code: 5400

TO: Dave Blumenkranz H4-90 DATE: April 26, 1995

COPIES: Doug Bowers N3-05 FROM: Mike Wesselman
Radiological Controls
N3-06/376-2084

Post-it® Fax Note 7671	Date 5/1	# of pages ▶ 1
To D. Bowers	From D. Blumenkranz	
Co./Dept. ITH/Samp.	Co. CHI/ERS	
Phone # 376-1007	Phone # 372-9658	
Fax # 376-5991	Fax #	

SUBJECT: **EXEMPTION OF SAMPLES FROM 100-HR-3 PUMP AND TREAT FROM TOTAL ACTIVITY ANALYSIS.**

After reviewing sampling data recorded on GeoDat as well as data from the latest resin change at the unit, it has been concluded that there is no need to perform total activity analysis of water sample from 100-HR-3 prior to offsite shipment. Water from all wells in the area is well below levels which would deliver 100 millirem per year CEDE to any one drinking two liters a day, no water exceeds the 2000 picocurie per gram limit for shipment as non radioactive by Department of Transportation. Activity trends in all wells have been downward for the last twenty years. Sample from the pump and treat system itself indicate less than six picocuries per gram of tritium and less than ten picocuries per liter of both alpha and beta contamination. All discharges of radioactive material to the ground in the 100-D Area have ceased, the actions of the pump and treat system do not appear to be mobilizing previously deposited materials. Based on the above information and the results of total activities performed to date, there is sufficient process knowledge to conclude that preshipment screening of water samples is no longer required.

Mike Wesselman

maw

Distribution

Post-it® Fax Note 7671	Date 6-1-95	# of pages ▶ 6
To Kathleen Hall	From Tony Miller	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

0060596A

WHC/BHI SAMPLE CHECK-IN LIST

Date/Time Received: 6-1-95 / 0900 SDG #: NA

Work Order Number: NA SAF #: B95-053

Shipping Container ID: ER-402 Chain of Custody # NA

1. Custody Seals on shipping container intact? Yes [X] No [ ]
2. Custody Seals dated and signed? Yes [X] No [ ]
3. Chain-of-Custody record present? Yes [X] No [ ]
4. Cooler temperature 2°C
5. Vermiculite/packing materials is Wet [ ] Dry [X]
6. Number of samples in shipping container: 3
7. Sample holding times exceeded: Yes [X] No [ ]
8. Samples have: ____ tape ____ hazard labels
   X custody seals X appropriate sample labels
9. Samples are: X in good condition ____ leaking
   ____ broken ____ have air bubbles
10. Were any anomalies identified in sample receipt? Yes [ ] No [X]
11. Description of anomalies (include sample numbers): _____

Sample Custodian: [signature] On: 6-1-95

Telephoned To: Kathleen Hall On 6-1-95 By Anthony M. Miller

FORM NO. LS-042, Rev. 1, 2/95

012

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LOCKHEED MARTIN

Sample Login
Login Review Checklist

Lot Number L4653

The login review should be conducted by that person logging in the samples as well as a peer. Please use this checklist to ensure that such reviews occur in a uniform basis. Please sign and date below to verify that a login review has occurred. This checklist should be affixed to each login package prior to distribution.

For effective login review, at a minimum, five reports form the login process are required. These are the COC (or equivalent), the login COC report, the sample summary report, the sample receiving checklist, and the login quotation. Before beginning review, ensure that these five components are available. Jobs with single component samples, the sample summary report may be omitted.

SAMPLE SUMMARY REPORT	YES	NO	N/A	Comment
1. Are all sample ID's correct?	X			
2. Are all samples present?	X			
3. Are all matrices indicated correctly?	X			
4. Are all analyses on the COC logged in for the appropriate samples?	X			
5. Are all analyses logged in for the correct container?	X			
6. Are samples logged in according to LAS batching procedures?	X			

LOGIN CHAIN OF CUSTODY	YES	NO	N/A	Comment
1. Are the collect, receive, and due dates correct for every sample?	X			
2. Have all appropriate comments been indicated in the comment section?	X			

SAMPLE RECEIVING CHECKLIST	YES	NO	N/A	Comment
1. Are all discrepancies between the COC and the login noted (if applicable)?			X	

[signature] primary review signature — 6-1-95 date — [signature] secondary review signature — 6-01-95 date

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066154GF

Lockheed Analytical Services
Sample Receiving Checklist

Client Name: Westinghouse Job No. L4453 Cooler ID:

COOLER CONDITION UPON RECEIPT			
Temperature of cooler upon receipt:	2 °C		
temperature of temp. blank upon receipt:			
	Yes	**No**	*** Comments/Discrepancies**
custody seals intact	X		
chain of custody present	X		
blue ice (or equiv.) present/frozen	X		
rad survey completed	X		

SAMPLE CONDITION UPON RECEIPT			
	Yes	**No**	*** Comments/Discrepancies**
all bottles labeled	X		
samples intact	X		
proper container used for sample type	X		
sample volume sufficient for analysis	X		
proper pres. indicated on the COC	X		
VOA's contain headspace			NA
are samples bi-phasic (if so, indicate sample ID'S):			NA

MISCELLANEOUS ITEMS			
	Yes	**No**	*** Comments/Discrepancies**
samples with short holding times	X		Hex Chrom. received out of holding time
samples to subcontract		X	

ADDITIONAL COMMENTS/DISCREPANCIES

Completed by / date: [signature] 6-1-95

Sent to the client (date/initials): ** Client's signature upon receipt:

*Notes: * = contact the appropriate CSR of any discrepancies immediately upon receipt*

*** = please review this information and return via facsimile to the appropriate CSR (702) 361-8146*

Lockheed Analytical Laboratory
SAMPLE SUMMARY REPORT (su02)
Bechtel Hanford, Inc. * Richland, WA

Client Sample Number	LAL Sample Number	SDG Number	Matrix	Method
B0FM88	L4653-1		Water	SCREENING
	L4653-2		Water	7196 CHROMIUM (V
	L4653-3		Water	218.2 CHROMIUM
REPORT TYPE	L4653-4		Water	EDD - DISK DEL
	L4653-4		Water	INORG TYPE 2 RPT

C600154

LOCKHEED ANALYTICAL SERVICES

COMMON IONS AND ADDITIONAL ANALYTES

Sample Results

Client Sample ID: B0FM88	Date Collected: 30-MAY-95
Matrix: Water	Date Received: 01-JUN-95

Constituent	Units	Method	Result	Reporting Det Limit	Data Qualifier(s)	Date Analyzed	LAS Batch ID	LAS Sample ID
Chromium, hexavalent	mg/L	7196	0.27	0.04	HD(1:2)	01-JUN-95	23665	L4653-2

DETERMINATION OF CHROMIUM - SAMPLE RESULTS

Client: Bechtel Hanford	Date Collected: 05-30-95	Matrix: water
LAL Batch ID: 601 bh1	Date Received: 06-01-95	Method: 218.2

Client Sample ID	Chromium in mg/L	IDL in mg/L	RDL in mg/L	data qualifier	Date Analyzed	LAL Sample ID
BOFM88	0.25	0.02	0.10	D(1:10)	06-12-95	L4653-3

Comments:

QC DATA SUMMARY

Method Blank Analysis Data Results

LAL Batch ID(s): 601 bh1

Constituent	LAL Sample ID	Date Analyzed	QC Sample Analyses
			Reagent Blank (mg/L)
Chromium	pbW601bh1	06-12-95	<0.002

Comments:

QC DATA SUMMARY

For Duplicate Sample Data Results

LAL Batch ID(s): 601 bh1

Constituent	Client Sample ID	LAL Sample ID	Date Analyzed	QC Sample Analyses			
				Sample Concentration (mg/L)	Duplicate Concentration (mg/L)	Relative Percent Difference (%)	Data Qualifier
Chromium	BOFM88	L4653-3	06-12-95	0.2474	0.2466	0.3	

Comments:

QC DATA SUMMARY

For Matrix Spike Sample Recovery Data Results

LAL Batch ID(s): 601 bh1

Constituent	Client Sample ID	LAL Sample ID	Date Analyzed	QC Sample Analyses				
				Matrix Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	(%) Recovery	Data Qualifier
Chromium	BOFM88	L4653-3	06-12-95	0.2726	0.2474	0.025	101	

Comments:

QC DATA SUMMARY

For Laboratory Control Sample Recovery Data Results

LAL Batch ID(s): 601 bh1

Constituent	Client Sample ID	LAL Sample ID	Date Analyzed	QC Sample Analyses			
				Laboratory Control Sample Result (mg/L)	True Value (mg/L)	(%) Recovery	Data Qualifier
Chromium	NA	LCSW601bh1	06-12-95	0.02263	0.025	91	

Comments: